

Oklahoma Ag in the Classroom

Mushrooms

mushroom production / button mushrooms / portobello mushrooms /
shiitake mushrooms / wild mushrooms



- The first mushrooms were thought to have been cultivated in Southeast Asia.
- In ancient times it was believed mushrooms were created by thunderbolts because wild mushrooms appear after storms.
- Mushrooms are spread in nature by spores, much the way seeds spread plants. They broadcast spores that colonize and grow where the conditions are right. A mature mushroom will drop as many as 16 billion spores.
- Because mushrooms contain no chlorophyll, they can't photosynthesize their own food, so they rely on other plants for their nutritive energy. Parasitic mushrooms colonize living plants; saprophytic mushrooms live off decaying organic matter.
- Mushrooms are a kind of fungi, a major group of living things, originally considered plants but now treated as the separate kingdom Fungi. They occur in all environments on the planet and include important decomposers and parasites.
- Since the body of a mushroom is usually dispersed over a large area, it is rarely noticed. In nature some species of mushrooms may have a body that spreads over hundreds of square miles.

- A population of honey mushrooms (*Armillaria ostoyae*) in the Blue Mountains of eastern Oregon was found to be the largest single organism in the world, spanning 2200 acres.
- Fungi have a vegetative body called a thallus or soma, composed of one-cell-thick filaments called hyphae. The hyphae typically form a microscopic network within the substrate (food source) called the mycelium, through which food is absorbed. Usually the most conspicuous part of any fungus are its fruiting bodies—reproductive structures that produce spores. The mushrooms we like to eat are the fruiting bodies of certain fungi.
- Many species of mushrooms and fungi have been used as folk medicines for thousands of years. These are now under intense study by ethnobotanists and medical researchers for their potential anti-cancer, anti-viral, and/or immunity-enhancement properties.

Mushroom Production

- A mushroom is not a true vegetable, since it has no leaves, roots or seeds and does not need light to grow. However, the National Agricultural Statistics Service includes mushrooms in the vegetable category for statistics purposes.
- Americans eat four pounds of mushrooms per capita a year. The Chinese eat about 22 pounds.
- Consumption of mushrooms in the US has quadrupled since 1965.
- Mushroom farms are climate controlled buildings; airflow, temperature and light are all constantly monitored.
- The US is the 2nd largest producer of mushrooms, following China.
- Pennsylvania, California and Florida are the top mushroom-

producing states.

- Mushrooms are canned, pickled and frozen, but drying mushrooms is the oldest and most commonly used way to preserve them.

Button Mushrooms

- Virgil Jurgensmeyer, Joe Jurgensmeyer and Darrell McLain founded J-M Farms, Inc., in Miami, OK, in the fall of 1979. The first button mushrooms were picked on March 13, 1980 and the first delivery was made the following day to Associated Wholesale Grocers of Springfield, MO. J-M Farms, Inc., delivers mushrooms to Oklahoma, Texas, Arkansas, Mississippi, New Mexico, Kansas, Missouri and Iowa.
- The button mushroom is one of the most widely cultivated mushrooms in the world. Most grocery stores in the western world sell this mushroom canned and fresh.
- The French started cultivating the button mushroom (*agaricus bisporus*) in the 17th Century.
- Today's commercial variety of the button mushroom was originally a light brown color. In 1926, a Pennsylvanian mushroom farmer found a clump of button mushrooms with white caps in his mushroom bed. Cultures were grown from the mutant individuals, and most of the cream-colored store mushrooms we see today are products of this haphazard natural mutation.
- The Portobello mushroom is a large brown strain of the same fungus as the button mushroom, left to mature and take on a broader, more open shape before picking. Portobello mushrooms are distinguished by their large size, thick cap and stem, and a distinctive musky smell.
- Portabella mushrooms serve as a substitute for meat in some

recipes because they have a similar texture.

Shiitake Mushrooms

- The shiitake mushroom is large and brownish to very dark brown and has a fleshy cap from about 1 to 2 inches across. Shiitake is easily dried. Dried shiitake is convenient to use and inexpensive to store and transport.
- The shiitake (she-TAH-kee) mushroom is native to Japan and China and grows naturally on fallen oak logs in the spring and autumn. Shiitake is from the Japanese "shii" for oak and "take" for mushroom. In China it is also called the hsaing ku, meaning fragrant mushroom.
- Shiitakes are the second most-consumed mushrooms in the world, after the button mushroom. In Asia it is number one. Shiitake mushrooms are Japan's number one agricultural export.
- Shiitake can be grown either on hardwood logs like oak or on a special combination of oak sawdust, bran, millet and other additives.
- Logs used for shiitake production usually average 4-6 inches in diameter and 40 inches in length. Spawn, or mycelium, is placed in pre-drilled holes. Mycelium is the mass of threads which forms the vegetative feeding part of the shiitake. Wax is melted and dripped over the hole to form a seal.
- Lost Creek Mushroom Farms in Perkins, Oklahoma, sells grow-your-own shiitake mushroom logs, fresh and dried shiitake mushrooms and other shiitake mushroom products.
- As an alternative enterprise in the US, shiitake mushrooms represent a way to use low quality hardwoods such as the white oak, post oak and sweet gum covering millions of acres in east and central Oklahoma.

Wild Mushrooms

- Many mushrooms are extremely poisonous. While not every mushroom is dangerously poisonous, most simply aren't large or tasty enough to be eaten. WILD MUSHROOMS SHOULD NOT BE EATEN UNLESS IDENTIFIED BY AN EXPERT, AND EVEN THE EXPERTS MAKE MISTAKES SOMETIMES because many safe mushrooms closely resemble poisonous ones.
- A simple identification error can lead to symptoms of sweating, cramps, diarrhea, confusion, convulsions and potentially result in liver damage with a mortality rate of 60 percent or higher.
- There are over 38,000 varieties of mushrooms available, over 3,000 in North America alone, with varying colors, textures and flavors. There are so many varieties of mushrooms, both edible and toxic, that mass consumption is pretty much limited to those commercially-grown varieties which can be trusted to be edible.

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